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RUCNSAD/SOUTHERN AF DEVELOPMENT COMMUNITY COLLECTIVE

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SUBJECT: COLUMBUS STAINLESS STEEL AND ASME NUCLEAR STANDARDS WORKSHOP

¶1. (SBU) SUMMARY: The U.S. Embassy supported the American Society of Mechanical Engineers (ASME) Nuclear Codes and Standards Workshop in Johannesburg, which successfully promoted Westinghouse's bid for significant new nuclear build in South Africa (septel). Delegates visited Columbus Stainless Ltd., Africa's only stainless steel production plant and an aspiring supplier to the potential South African and global nuclear industry, on October 9. Columbus is a fully-integrated, high-tech plant developed by Spanish stainless steel giant Acerinox S.A. The plant is currently operating at 30-40 percent of capacity due to global financial turmoil and the drop-off of export orders, particularly from China and Asia. End Summary.

ASME Workshop on Nuclear Codes and Standards

¶2. (SBU) Columbus Stainless Ltd. is Africa's only stainless steel plant and is one of three plants owned and operated by Spanish stainless steel giant Acerinox S.A. Minerals and Energy Specialist toured the Columbus plant in Middelburg, Mpumalanga as the final day of the ASME Nuclear Codes and Standards Workshop held in Johannesburg on October 7-9, 2008 (septel). The program was a cooperative initiative promoted by U.S.-based ASME (American Society of Mechanical Engineers) and the Johannesburg-based U.S. Commercial Service in support of Westinghouse's bid for new nuclear build and the potential localization and globalization of the South African nuclear industry.

¶3. (SBU) The SAG plans to construct an ambitious 20,000 MW of new nuclear power capacity over the next 20 years. The initial tender is for 3,000 MW, representing two-three individual reactors. The larger fleet is intended to comprise a mix of conventional pressurized water reactor (PWR) plants and locally-developed Pebble Bed Modular Reactor plants of 165 MW each. The ASME workshop was co-sponsored by Westinghouse and Areva of France, which are the two preferential bidders for the supply and construction of the conventional PWRs.

¶4. (SBU) Some 400 delegates from South Africa's supplier and services industries attended the ASME workshop, showing strong interest from potential nuclear suppliers in adopting ASME standards. ASME is a U.S.-based, independent organization that sets globally-recognized performance, testing, safety and numerous other codes and standards for engineering structures and products. ASME

also provides testing services that enable products manufactured and built under local or other international codes and standards to be certified compliant with ASME standards and codes. The workshop covered most aspects of ASME's work and the requirements for potential certification of South Africa's Pebble Bed Modular Reactor power plant now under development, plus products used in a nuclear plant that may be exported.

Global Stainless Steel

¶5. (SBU) The global long-term growth rate for stainless steel has averaged more than 6 percent per year, equivalent to 1.7 million Qaveraged more than 6 percent per year, equivalent to 1.7 million tons of new steel each year. Production for 2008 is estimated to be 28-29 million tons. Global production and South African exports of stainless steel in millions of tons are:

Production

Country	2008(6-mths)	2007	2006
W Europe	4.862	8.669	9.972
C-E Europe	194	364	363
Americas	1.357	2.604	2.951
Asia	8.344	16.200	15.074
Total	14.776	27.836	28.359

South African Exports

	Total	Asia	W Europe	NAFTA
2007	506,000	220,000	132,000	92,000
2006	515,000	175,000	218,000	73,000

¶6. (SBU) Stainless steel represents a family of chromium and nickel-containing alloys that are corrosion-resistant and retain tensile strength at high temperatures. These alloys contain at least 11 percent chromium, which forms a chrome-oxide layer on the metal that makes stainless steel corrosion resistant. This metal surface layer regenerates itself if damaged as long as oxygen is available. The stainless steel family comprises four main branches and Columbus Stainless manufactures the two most commonly used types, namely ferritic and austenitic steels. Ferritic steels contain 12-18 percent chromium, while the austenitic steels have an additional 8-10 percent nickel. Some steels also have titanium, molybdenum, and other elements added in minor quantities to enhance properties such as resistance to pitting corrosion and stress-corrosion cracking.

Columbus Stainless - Africa's Lone Plant

¶7. (SBU) Columbus Stainless is a technologically advanced, fully integrated operation, situated in Middleburg in Mpumalanga Province. Columbus began life as a South African-owned, ferro-chrome smelter and was converted into a stainless steel plant in 1966. Spanish stainless steel giant Acerinox bought a 64 percent share in 2002 and increased this to 76 percent in 2005. Other shareholders are the state-owned Industrial Development Corporation (IDC) and private company Samancor, each with 12 percent. Acerinox has spent about $310 million since 2002 to expand and upgrade Columbus' cold-rolling facilities. It also has plants in Spain and Kentucky (U.S.) and produces some 10-11 percent of global stainless steel. Columbus Stainless was catapulted into the major league of stainless steel producers by Spanish company Acerinox S.A.'s take-over of the company. Acerinox invested $310 million to introduce new technology and skills into Columbus and to expand its capacity to produce world-quality, higher-valued, cold-rolled steel. Columbus Management says that Columbus' productivity and steel quality is slightly below that of the Kentucky plant, but ahead of the Spanish mother plant, and still improving.

¶8. (SBU) Stainless steel offers unique properties needed in nuclear plants for piping and tubing in heat exchangers and for containers

for the long-term storage of spent nuclear fuel and other highly radioactive materials. Columbus intends to tender for the supply of stainless steel materials and components for the nuclear facilities. It also seeks to have its products compliant with ASME codes and standards in order to market to the international nuclear industry.

¶9. (SBU) Columbus has the capacity to produce 1 million tons of stainless steel per year, but would require additional capital and a 20-30 MW furnace to reach this production level. Implementation depends on demand growth and the availability of power. Columbus has a maximum cold-rolling capacity of 600,000 tons of value-added stainless steel and 150,000 tons of hot-rolled steel plate, both Qstainless steel and 150,000 tons of hot-rolled steel plate, both subject to demand. Final cold-rolled products include coil (5.8-0.25 millimeters thick) and sheets in various lengths and widths. A lower-value hot-rolled product is also produced as sheet, slab, or coil according to customer specifications. Exports account for 80 percent of production. Feed for the smelter consists mainly of some 600,000 tons of carbon-steel scrap, 250-300,000 tons of ferro-chrome supplied by the neighboring Samancor plant, and 50-70,000 tons of nickel ingots supplied locally and from imports.

Impact of the Global Downturn on Columbus Stainless

¶10. (SBU) Columbus' output has declined to 30-40 percent of capacity since August. China was a major purchaser of stainless steel from Columbus prior to the Olympic Games, but has since not placed an order. Columbus only produces on order and is therefore immediately affected by any downturn in economic activity. Discussions with management indicate that this cut in output is not the worst that the company has seen over its history and no layoffs are anticipated. Management states that Columbus has not retrenched

staff in the last ten years, if ever. The price of benchmark "304" stainless steel has dropped from $5,500 to $3,500 per ton over the last three months. Nickel's price has dropped from $55,000 to $13,000 per ton during the same period. At its peak price, nickel accounted for 70-80 percent of Columbus' production costs. Much of the nickel is purchased on consignment and is costed using the LME price when consumed. The current commodity downturn is expected to be short as China (and Asia) is likely to return to the market within the next few months. Prices for stainless steel have fallen by some 36 percent, but Columbus is still profitable. The 60-70 percent volume decline is a concern, and Columbus is looking to increase penetration into Africa and to increase sales into the nuclear industry.

The Stainless Steel Process

¶11. (SBU) Columbus management presented details of the stainless steel process. Normal carbon steel scrap is melted in an electric arc furnace (EAF) with measured quantities of ferro-chrome and nickel, plus other "ingredients" as required to match the specification of the stainless steel product ordered. The molten metal is refined and cast into slabs of 900 mm to 1,600 mm wide and 200 mm thick, and then cut into lengths of between 4 and 12 metres. The slabs are hot-rolled at about 1,250 degrees Celsius to the desired thickness and then either coiled (black coil) or cut into plate (black plate). Each coil weighs between 20 and 30 tons and the steel thickness can be between 8.0 mm and 3.0 mm. Plate thickness ranges between 65.0 mm and 3.0 mm. After a clean-up treatment, these products can be sold or cold-rolled to produce a higher-value product. Cold rolling and finishing takes place on a heavy gauge cold mill to produce a smooth, shiny-finished, stainless steel. The thickness range of the cold-rolled product is between 5.8 mm and 0.25 mm. The steel may be further treated to produce a brighter, flat surface or a bright, permanent finish. The coils can then be cut and polished as required by the customer.

Opportunities for Stainless Steel in South Africa

¶12. (SBU) Columbus management have identified specific growth areas within the South African market to grow the company's sales. These include:

-- the stadiums for the 2010 FIFA World Cup, where stadiums are being built from scratch and are steel-intensive;

-- the rapid-rail (Gautrain) mass transit project as a significant user of stainless steel, plus other rail and rolling stock expansions;

-- the power sector, where Eskom has a massive program to build new generation capacity, including two or three 4,800 MW coal-fired plants and new nuclear plants;

-- the resource sector where new mines, plants, smelters and refineries are being established or planned, both in South Africa and elsewhere in Africa; and

-- the manufacturing sector, including vehicle exhaust systems and
Q-- the manufacturing sector, including vehicle exhaust systems and catalytic converters (currently at 15 percent of the global market) and bulk tank containers (which account for about 50 percent of the world's output.)

¶13. (SBU) Columbus is an eager potential supplier to the nuclear industry and graciously stepped up to offer a tour for delegates of the ASME Nuclear Codes and Standards Workshop. This provided delegates an opportunity to observe challenges and opportunities in bringing South African industry up to ASME standards for the nuclear industry. Columbus is not there yet, but they are making the effort and embraced the spirit of the ASME event.

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